

## Message Text

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NSAE-00 NSC-10 PA-04 RSC-01 PRS-01 SPC-03 SS-20

USIA-15 ACDA-19 IO-14 SCI-06 MC-02 DRC-01 SCEM-02

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P R 031956Z DEC 73

FM AMEMBASSY LONDON

TO SECSTATE WASHDC PRIORITY 6060

USAEC GERMANTOWN PRIORITY

INFO AMEMBASSY BONN

AMEMBASSY BRUSSELS

AMEMBASSY PARIS

AMEMBASSY ROME

AMEMBASSY THE HAGUE

USMISSION EC BRUSSELS

C O N F I D E N T I A L SECTION 01 OF 02 LONDON 14147

E.O. 11652: GDS

TAGS: ENRG, UK

SUBJECT: PROSPECTIVE HMG DECISION ON NUCLEAR POWER

REACTOR TYPE: LWR VERSUS AGR

BEGIN SUMMARY. FINAL HMG DECISION IS EXPECTED BY EARLY FEBRUARY ON TYPE OF 10 TO 12 NUCLEAR POWER REACTORS TO BE BUILT BY NEW NATIONAL NUCLEAR COMPANY FOR REST OF DECADE. CHOICE IS ESSENTIALLY BETWEEN LWR AND AGR, ALTHOUGH SGHWR, CANDU AND HTR ARE ALSO STILL OFFICIALLY UNDER REVIEW. MAIN FACTORS INFLUENCING HMG DECISION WILL BE TECHNICAL AND PUBLIC OPINION ASPECTS OF LWR SAFETY ISSUE AS WELL AS ANTICIPATED POLITICAL FALLOUT FROM ABANDONMENT OF BRITISH TECHNOLOGY IN FAVOR OF AMERICAN DESIGN. AT PRESENT, CEGB AS "CUSTOMER" HAS CLEARLY OPTED FOR LWR; SIR ARNOLD WEINSTOCK, HEAD OF GENERAL ELECTRIC COMPANY WHICH IS 50 PERCENT OWNER AND

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MANAGER OF NATIONAL NUCLEAR COMPANY, FAVORS LWR IF IT

CAN WIN HMG APPROVAL; AND UKAEA APPEARS TO BE ACQUIESCENT. HOWEVER, SIR ALAN COTTRELL, CHIEF SCIENTIFIC ADVISER TO PM HEATH AND THE CABINET, REPORTEDLY IS SKEPTICAL OF INTEGRITY OF LWR STEEL PRESSURE VESSEL. MOST IMPORTANT PERHAPS WILL BE ATTITUDE TAKEN BY SECRETARY OF STATE FOR TRADE AND INDUSTRY PETER WALKER WHO, AFTER CONSULTATION WITH NUCLEAR POWER ADVISORY BOARD, MUST RECOMMEND SPECIFIC REACTOR TYPE TO HIS CABINET COLLEAGUES AND THEN DEFEND CHOICE BEFORE PARLIAMENT, PRESS, ENVIRONMENTALISTS AND PUBLIC IN GENERAL. IT CANNOT BE RULED OUT AT THIS STAGE THAT HMG WILL REJECT LWR OR HEDGE ITS BETS BY DECIDING TO BUILD AN LWR ON EXPERIMENTAL BASIS AS WELL AS ANOTHER AGR, DELAYING ULTIMATE DECISION ON REACTOR CHOICE UNTIL OPERATIONAL EXPERIENCE OF AGRS CAN BE ACCUMULATED AND COMPARED WITH CONSTRUCTION EXPERIENCE AND THEN EXISTING ECONOMICS AND SAFETY STATUS OF "OFF-THE-SHELF" LWR. ACTION REQUESTED: USAEC

PROVIDE DETAILED INFORMATION ON FRACTURE MECHANICS ANALYSIS AND EXPERIENCE WITH STEEL PRESSURE VESSEL FAILURES OF LWRs FOR SUBMISSION TO HMG. END SUMMARY.

1. STATUS REPORT WHICH FOLLOWS IS BASED LARGELY ON MEETINGS WITH CEBG BOARD MEMBER BOB PEDDIE, UKAEA CHAIRMAN SIR JOHN HILL, NATIONAL NUCLEAR COMPANY INTERNATIONAL RELATIONS DIRECTOR JAMES STEWART, DTI CHIEF SCIENTIFIC ADVISER E.C. WILLIAMS, DTI ATOMIC ENERGY ASSISTANT SECRETARY CHRISTOPHER HERZIG AND LOCAL COMPANY REPRESENTATIVES. ALL MEETINGS TOOK PLACE NOVEMBER 29-30 ON OCCASION OF VISIT OF SENIOR AEC REPRESENTATIVE FROM USEC BRUSSELS.

2. DURING PAST FEW MONTHS PROSPECTS FOR BRITAIN BUYING "PROVEN" AMERICAN DESIGN LIGHT WATER REACTORS (LWRs) HAVE IMPROVED DRAMATICALLY AS BRITISH FACE UP TO REQUIREMENTS OF BUILDING CONSIDERABLY LARGER NUMBER OF POWER REACTORS BY 1980 THAN HAD BEEN ANTICIPATED. JUST OVER ONE YEAR AGO CENTRAL ELECTRICITY BOARD (CEGB) CONFIDENTIAL

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CHAIRMAN ARTHUR HAWKINS PREDICTED ONLY BETWEEN ONE AND FOUR REACTORS WOULD BE BUILT FOR REST OF DECADE. CEGB, UKAEA AND DTI OFFICIALS CURRENTLY ESTIMATE THAT 10 TO 12 REACTORS (TWO EVERY YEAR TO EIGHTEEN MONTHS) WILL BE ORDERED BETWEEN 1974 AND 1980. LOCAL US COMPANY REPRESENTATIVE BELIEVES MARKET THROUGH 1980s COULD REACH 30-40 REACTORS.

3. CONTEST FOR HMG APPROVAL IS NOW ESSENTIALLY BETWEEN EITHER WESTINGHOUSE PWR OR GENERAL ELECTRIC BWR AND BRITISH-DESIGNED ADVANCED GAS-COOLED REACTOR (AGR). NONE OF FIVE AGRS ORDERED SINCE 1965 ARE IN OPERATION AS YET AND, IN ADDITION TO STRAIGHT COMPARATIVE ECONOMIC DISADVANTAGE, TIME-CONSUMING IF NOT INSURMOUNTABLE TECHNICAL PROBLEMS HAVE CROPPED UP. ACCORDINGLY, BRITAIN WILL NOT HAVE RELIABLE OPERATING EXPERIENCE ON AGRS FOR ANOTHER TWO TO FOUR YEARS AND PROVEN US DESIGNS HAVE GREAT APPEAL, CERTAINLY FOR HALF DOZEN OR SO REACTORS WHICH SHOULD BE ORDERED DURING THIS PERIOD. ALTHOUGH

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BRITISH SGHWR AND CANADIAN CANDU REACTORS ARE OFFICIALLY UNDER CONSIDERATION, THEY APPEAR TO HAVE WON LITTLE SUPPORT WITHIN RESPONSIBLE GOVERNMENT OR INDUSTRY CIRCLES.

4. AN IMPORTANT FACTOR INFLUENCING HMG DECISION WILL BE TECHNICAL AND PUBLIC OPINION ASPECTS OF LWR SAFETY ISSUE. CONCERN OVER ASSURED FUNCTIONING OF EMERGENCY CORE COOLING SYSTEM (ECCS) IN LOSS OF COOLANT ACCIDENT HAS RECEIVED AND UNDOUBTEDLY WILL CONTINUE TO RECEIVE CONSIDERABLE ATTENTION BOTH IN PRESS AND WITHIN DECISION-MAKING CIRCLES. BRITISH ARE LOATH TO IMPORT ANY MORE OF ENVIRONMENTALIST FERVOR OR ANTI-NUCLEAR POWER CONTROVERSY INTO UK THAN THEY ABSOLUTELY MUST. ATTACKS BY US GROUPS ON LWR SAFETY AND USAEC METHOD OF ASSESSMENT HAVE MADE THEM UNCOMFORTABLE, AND THEY WOULD FEEL ON SAFER GROUND IF THIS ISSUE COULD BE DEFUSED.

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5. OF MORE IMMEDIATE TECHNICAL CONCERN TO INDUSTRY AND GOVERNMENT OFFICIALS DIRECTLY INVOLVED HOWEVER IS REAL DOUBT IN MINDS OF LEADING BRITISH METALLURGISTS (INCLUDING, WE ARE TOLD ON CONFIDENTIAL BASIS, SIR ALAN COTTRELL, CHIEF SCIENTIFIC ADVISER TO PRIME MINISTER AND CABINET), ABOUT INTEGRITY OF LWR STEEL PRESSURE VESSEL. QUESTION ON PRESSURE VESSEL INVOLVES FRACTURE MECHANICS; SPECIFICALLY ANALYSIS OF AND EXPERIENCE WITH, FOR EXAMPLE, LENGTH OF TIME IT WOULD TAKE FOR QUARTER INCH CRACK IN STEEL VESSEL TO EXPAND TO THREE INCHES, THEREBY REACHING DANGER POINT AND REQUIRING SHUTDOWN OF REACTOR. IF NOT FULLY SATISFIED ON FRACTURE MECHANICS, HMG COULD DECIDE TO REJECT LWR OR POSSIBLY INSIST ON REMOTE SITING OF LWR UNTIL INTEGRITY OF VESSEL MORE FULLY TESTED. LESS LIKELY WOULD BE DECISION TO OPT FOR LWR WITH PRE-STRESSED CONCRETE INSTEAD OF STEEL VESSEL SINCE THIS WOULD NO LONGER CONSTITUTE "PROVEN" REACTOR AND WOULD ALSO INCREASE COSTS. DTI, CEBG, NATIONAL NUCLEAR COMPANY AND UKAEA OFFICIALS HAVE ALL EXPRESSED VIEW THAT ANY INFORMATION USAEC CAN PROVIDE IN THIS AREA WOULD BE MOST HELPFUL.

6. TECHNOLOGICAL NATIONALISM STILL IS QUITE STRONG IN BRITAIN, ALTHOUGH FAR LESS SO THAN IN PAST. HOUSE OF COMMONS SELECT COMMITTEE ON SCIENCE AND TECHNOLOGY CAN BE RELIED ON TO CONTINUE TO PLUMP IN PRIVATE AND PUBLIC FOR AGR OR SGHWR IN PREFERENCE TO AMERICAN-DESIGNED LWR. SIMILARLY, SEGMENTS OF ENTRENCHED NUCLEAR ESTABLISHMENT HAVING VESTED INTEREST IN BRITISH TECHNOLOGY AND WILL OPPOSE ON BASIS OF NOT-INVENTED HERE SYNDROME, USING DESIRE TO AVOID ATROPHY OF BRITISH HUMAN AND TECHNOLOGICAL ASSETS AS WELL AS "UNNECESSARY" EXPENDITURE OF FOREIGN EXCHANGE AS PROP FOR THEIR ARGUMENTS. NONETHELESS, CEBG HAS ALREADY MADE CRYSTAL

CLEAR ITS PREFERENCE FOR A "PROVEN" REACTOR SYSTEM, NAMELY, AN LWR. MOREOVER, SIR ARNOLD WEINSTOCK, DYNAMIC HEAD OF GENERAL ELECTRIC COMPANY WHICH IS 50 PERCENT OWNER AND PROVIDER OF TOP-LEVEL MANAGEMENT FOR NATIONAL NUCLEAR COMPANY, HAS SAID HE FAVORS LWR AS LONG AS IT CAN GET TECHNICAL NOD FROM HMG. (SIR ARNOLD MAY  
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ALSO HAVE HIS EYE ON BROADER LINKUPS IN ELECTRONICS INDUSTRY THROUGHOUT EUROPE WITH EITHER WESTINGHOUSE OR GENERAL ELECTRIC). AT THIS STAGE, UKAEA SEEMS RECONCILED TO FACT THAT BRITAIN BY ITSELF DOES NOT HAVE STRONG ENOUGH INDUSTRIAL OR MARKET BASE TO SUPPORT AGR OR ANY OTHER REACTOR SYSTEM. THIS IS NOT TO SAY UKAEA WOULD NOT DEFEND TECHNOLOGICAL MERITS OF AGR AND SUPPORT FURTHER AGR CONSTRUCTION IF HMG SO DECIDED.

7. RECOMMENDATION BY SECRETARY OF STATE PETER WALKER TO HIS CABINET COLLEAGUES, AFTER CONSULTATION WITH NUCLEAR POWER ADVISORY BOARD, WILL OF COURSE TAKE INTO ACCOUNT LIKELY REACTION OF PARLIAMENTARY, ENVIRONMENTALIST AND GENERAL PUBLIC OPINION, AS WELL AS TECHNICAL JUDGMENTS OF CEGB, UKAEA, NATIONAL NUCLEAR COMPANY, DTI AND CABINET ADVISORY OFFICIALS. UNLESS WALKER AND CABINET CAN FEEL CONFIDENT THEIR CHOICE OF LWRS CAN BE ADEQUATELY DEFENDED ON BOTH TECHNICAL AND POLITICAL GROUNDS, IT CANNOT BE RULED OUT THAT HMG WILL REJECT LWR OR HEDGE ITS BETS BY DECIDING TO BUILD AN LWR ON EXPERIMENTAL BASIS, AS WELL AS ANOTHER AGR, DELAYING ULTIMATE DECISION ON REACTOR CHOICE UNTIL OPERATIONAL EXPERIENCE OF AGRS CAN BE ACCUMULATED AND THEN COMPARED WITH CONSTRUCTION EXPERIENCE AND THEN EXISTING ECONOMICS AND SAFETY STATUS OF "OFF-THE-SHELF" LWRS. ANNENBERG

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## Message Attributes

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**TAGS:** ENRG, UK  
**To:** STATE  
**Type:** TE  
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